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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/583,245  | 05/31/2000  | Wai-Kwong (Sam) Lee  | 99,027              | 2848             |
| 21253   | 7590        | 09/08/2004           | EXAMINER            |                  |
| CHARLES G. CALL<br>68 HORSE POND ROAD<br>WEST YARMOUTH, MA 02673-2516 |             |                      | NGUYEN BA, PAUL H   |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2176                |                  |

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/583,245             | LEE ET AL.          |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Paul Nguyen-Ba         | 2176                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see Amendment, filed April 28, 2004, with respect to the rejection(s) of claim(s) 1-20 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.
2. Claims 1-20 have been considered. Claims 1 and 14 are independent claims.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 6, 9, and 14-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Krupa, U.S. Patent Application Publication No. 2002/0156811.

### **Independent Claim 1**

Krupa teaches *a method for storing an XML document in a relational database system*

(see Title and Abstract) comprising:

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*parsing the character data in said XML document to identify characters representing data values within at least some of the elements of said XML document (see [0014], [0028], and [0029] → traversing and mapping includes forming each of the corresponding unique keys as associated hierarchical tree strings);*

*storing each of said data values in a specified column location in one or more specified rows of one or more specified tables in said relational database system (see Fig. 2; [0026] → relational data is stored as rows of information where each row is uniquely identified by a certain unique key; [0037]-[0046] → what each column of the table represents; and see generally [0047]-[0110] → “The Storage Algorithm” – creates a new row of data with column assignments),*

*removing at least some of said data values from said XML document (see Fig. 2) and storing the remainder of said XML document in said database as an XML skeleton which defines the structure of said XML document (see [0024] and [0124] → in-memory XML document tree is stored in memory with all parent-child relationships and as well as empty elements intact),*

*thereafter reconstructing said XML document by merging the data content of said specified rows with said XML skeleton (see [0113] → an in-memory XML tree can be easily reconstructed by interrogating each data row and creating the appropriate object that corresponds to that row).*

## **Claim 2**

Krupa teaches the method set forth in claim 1 wherein *the data value stored in each of said specified columns is obtained from a leaf element of said XML document which contains no sub element (see Fig. 2; [0014] and [0027] → i.e. descriptor).*

**Claim 3**

Krupa teaches the method set forth in claim 2 wherein *the data values stored in each given one of said specified rows is obtained from an XML element which contain one or more of given ones of said leaf elements, the data values in said given ones of said leaf elements being stored in columns in said given one of said specified rows* (see Fig. 2; [0037]-[0044]; and [0047] *et seq.* → “The Storage Algorithm”).

**Claim 4**

Krupa teaches the method set forth in claim 3 further including *the step of storing data describing the properties of at least selected ones of said data values* (see Fig. 2; [0037]-[0044]; and [0047] *et seq.* → “The Storage Algorithm”).

**Claim 6**

Krupa teaches the method set forth in claim 5 wherein said properties further include *the designation of the data type for at least some of said data values* (see Fig. 2; [0041] → Data\_Type).

**Claim 9**

Krupa teaches *the step of performing a relational database operation to modify the data value stored in at least one of said column locations such that the step of reconstructing said XML document produces a modified XML document* (see [0045] → SQL is an ANSI standard computer language for accessing and manipulating databases, including such operations as insert, update, etc.).

#### **Independent Claim 14**

With respect to independent claim 14, refer to the rationale relied upon to reject independent claim 1. Furthermore, Krupa teaches *an apparatus for storing an XML document in a relational database* (see Title and Abstract) *which comprises,*

*means for performing one or more relational operations on one or more of said data values stored in said one or more tables* (see [0045] → SQL is an ANSI standard computer language for accessing and manipulating databases, including such operations as insert, update, etc.).

#### **Claims 15-17**

Krupa teaches an apparatus for performing relational operations via SQL an ANSI standard computer language for accessing, querying, and manipulating databases, including such operations as insert, update, modify, delete, etc (see [0045]).

#### **Claim 18**

Claim incorporates substantially similar subject matter as claim 6, and is rejected along the same rationale.

#### **Claims 19 and 20**

Krupa teaches the apparatus for removing at least some of said data values from said XML document (see Fig. 2) and storing the remainder of said XML document in said database as an XML skeleton which defines the structure of said XML document (see [0024] and [0124] → in-memory XML document tree is stored in memory with all parent-child relationships and as well as empty elements intact), and thereafter reconstructing said XML document by merging the data content of said specified rows with said XML skeleton (see [0113] → an in-memory XML

tree can be easily reconstructed by interrogating each data row and creating the appropriate object that corresponds to that row).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krupa, U.S. Patent Application Publication No. 2002/0156811, in view of Lee et al. ("Lee"), U.S. Patent Application Publication No. 2002/0169788.

**Claim 5**

Krupa teaches the method set forth in claim 4 wherein said properties include the designation of one or more of said data values as a unique key for use by said relational database system, but does not specifically teach a primary key.

However, Lee teaches the use of a primary key in a relational database system (see [158], [159], and [161]) for the purpose of uniquely identify the rows in the table.

Since Krupa and Lee are both from the same field of endeavor, the purposes disclosed by Lee would have been recognized in the pertinent art of Krupa. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the

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teaching of Krupa with the teachings of Lee to include the use of a primary key in a relational database system for the purpose of uniquely identify the rows in the table.

**Claim 7**

Krupa teaches the method set forth in claim 6 as discussed above, but does not specifically teach wherein *said properties further include the designation of one or more of said data values as indexing values.*

However, Lee teaches the designation of one or more data values as indexing values for the purpose of the storing of an XML document as an XML column (see [0037]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teaching of Krupa with the teachings of Lee to include the designation of one or more data values as indexing values for the purpose of the storing of an XML document as an XML column.

**Claim 10**

Krupa teaches the means for storing an XML Descriptor [0014], but does not specifically teach *step of storing an XML Descriptor which includes information obtained from the document type definition (DTD) associated with said XML document.*

However, Lee teaches data representative of the DTD is stored (via the extractor) into the metadata tables storage portion as metadata representative of the DTD (see [0098], [104], and [112]) for the purpose of optionally restructuring the DTD later on.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teaching of Krupa with the teachings of Lee to include storing an XML Descriptor which includes information obtained from the document type



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definition (DTD) associated with said XML document for the purpose of optionally restructuring the DTD later on.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krupa, U.S. Patent Application Publication No. 2002/0156811, in view of Harless, U.S. Patent Application Publication No. 2003/0005410.

### **Claim 8**

Krupa teaches the method set forth in claim 1 as discussed above, but does not specifically teach the *step of designating one or more of said elements of said XML documents as static elements...XML skeleton*.

However, Harless teaches a parser for COBOL, a procedural language which requires a static variable definition including the type and size of the variable. In general, COBOL needs messages that are defined as static structures of data elements with each data element having a fixed data type and size (see [0014] and [0025]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teaching of Krupa with the teachings of Harless to include a step of designating one or more data elements of said XML documents as static elements for the purpose of fixing the element values and not allowing changes to the elements.

8. Claims 11, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krupa, U.S. Patent Application Publication No. 2002/0156811, in view of Lee et al. ("Lee"),

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U.S. Patent Application Publication No. 2002/0169788, and in further view of Harless, U.S.

Patent Application Publication No. 2003/0005410.

### **Claim 11**

Krupa, in view of Lee, teaches the method set forth in claim 4 and 10 as discussed above, wherein said properties include the designation of one or more of said data values as a primary key for use by said relational database system, but does not specifically teach *said step of removing at least some of said data values does not remove said primary key data values but instead retains said primary key values in said skeleton*

However, Harless teaches static structures of data elements with each data element having a fixed data type and size (see [0014] and [0025]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teaching of Krupa with the teachings of Harless to include a step of designating the primary key data values of said XML documents as static elements for the purpose of fixing and retaining the primary key data values and not allowing changes to the elements.

### **Claim 12**

Krupa, in view of Lee, in further view of Harless teaches the method set forth in claim 11 as discussed above wherein *said XML Descriptor further specifies the data type of the data values in one or more specified elements of said XML document* (see Fig. 2 and [0042]).

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**Claim 13**

Krupa, in view of Lee, in further view of Harless teaches the method set forth in claim 12 wherein *said properties further include the designation of one or more of said data values as indexing values* (see Lee - [0037]).

**Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Cornelius, Shawn S. et al.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Nguyen-Ba whose telephone number is (703) 305-8776. The examiner can normally be reached from 10:30 am - 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (703) 305-9792. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PNB

  
JOSEPH FEILO  
SUPERVISORY PATENT EXAMINER